

MONTHLY WEATHER REVIEW.

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INTRODUCTION.

This REVIEW contains a general summary of the meteorological conditions which prevailed over the United States and Canada during November, 1886, based upon the reports from the regular and voluntary observers of the Signal Service and from co-operating state weather services.

Descriptions of the storms which occurred over the north Atlantic Ocean during the month are also given, and their approximate paths shown on chart i. In tracing the centres of the paths of these storms, data from the reports of one hundred and eighty-five vessels have been used.

With the exception of one iceberg, observed on the 2d, no ocean ice has been reported in the vicinity of the trans-Atlantic ship routes.

On chart i for this month are traced the paths of fourteen areas of low pressure; the average number for November during the last fourteen years being 11.7. That described as number vii was the severest storm of the month, and caused, in connection with the succeeding area of high pressure, meteorological disturbances over the greater part of the country east of the Rocky Mountains; the gales on the Lakes, and high winds with snow in the Missouri and upper Mississippi valleys, were especially severe.

The mean pressure for the month is normal, or nearly so, over the eastern slope of the Rocky Mountains; from this region eastward it is generally below the normal; along the Pacific coast it is considerably above the normal.

The month has been colder than the average November in all districts of the United States, except New England, the middle Atlantic states, and North Carolina.

The precipitation is very small on the Pacific slope and in the south Atlantic and Gulf states; in the other districts it presents no great departures from the normal.

In this REVIEW, under "Notes and extracts," will be found an instructive paper by Prof. Cleveland Abbe, Assistant, on "The effects of wind and exposure upon barometric readings;" also a paper by Private I. M. Cline, Signal Service observer at Abilene, Texas, on "Rainfall and its source in the southern slope;" and an article by Dr. H. B. Baker, secretary of the Michigan State Board of Health, containing a short discussion of the relations existing between dry and cold air and the causes of pneumonia.

In the preparation of this REVIEW the following data, received up to December 20, 1886, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and thirty-three Signal Service stations and twenty Canadian stations, as telegraphed to this office; one hundred and sixty-two monthly journals; one hundred and fifty-six monthly means from the former, and twenty monthly means from the latter; two hundred and sixty-nine monthly registers from voluntary

observers; fifty-four monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs furnished by the publishers of "The New York Maritime Register;" monthly weather reports from the local weather services of Alabama, Indiana, Illinois, Iowa, Minnesota, Mississippi, Missouri, Nebraska, New England, New Jersey, Ohio, and Tennessee; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE.

[Expressed in inches and hundredths.]

The distribution of mean pressure for November, 1886, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

An examination of the chart will show that the mean atmospheric pressure over the United States during the month is greatest in Washington Territory, Oregon, Nevada, Utah, and northern California, where it ranges from 30.16 at Tatoosh Island, Washington Territory, to 30.31, the highest mean pressure of the month, at Fort Bidwell, California, and averages about 30.24. The area of minimum pressure covers Maine, New Hampshire, Vermont, northern New York, and the upper lake region; within this area the pressure ranges from 29.89 at Mount Washington, New Hampshire, to 29.93 at several stations on the upper lakes, and averages about 29.92. Southward of the isobar of 29.95, which extends almost directly east and west through the centre of New England, New York, and the Lakes, the pressure increases steadily at the rate of about .05 to each three degrees of latitude until the pressure of 30.13 is attained along the Gulf coast.

The departures from the normal pressure are given in the table of miscellaneous meteorological data, and are also shown on chart iv by lines connecting stations of equal departure. The mean pressure when compared with the normal will be found deficient, except in Florida and a narrow strip along the Gulf coast, over the eastern half of the country, and excessive in the western half, with the exception of Dakota and eastern Montana where it is normal or slightly below. The largest departures below the normal occur in New England, New York, Pennsylvania, and Maryland, where they range from .14 at New London, Connecticut, to .10 at several stations; in the south Atlantic and Gulf states the pressure exhibits only slight departures from the normal. In the Rocky Mountain regions and along the Pacific coast the pressure of the month is considerably above the normal, the largest departures occurring in Washington Territory and Oregon, where they average about .16. At two stations, Tatoosh Island and Fort Canby, Washington Territory, the unusually large departure of .23 occurs; this is partially owing to the short record from which the normal at these stations is deduced; all stations in California show an increase of .07.

When compared with the mean pressure of the preceding month, October, 1886, a very large decrease is noted in the portion of country lying north of the thirty-fifth parallel and east of the Mississippi River, the deficiency in New England and the Lake region is especially large, the departures ranging from .17 to .27. In the Rocky Mountain regions and along the Pacific coast the increase is equally as large, the